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THE SYNTAX OF NUMERALS IN MALTESE

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1. Preliminaries

In this paper I propose a specific syntactic representation for a segment of the noun phrase (NP) in Maltese. In particular, using data involving the numeral system I will argue for the existence of a functional category NMB which syntactically projects onto a maximal phrase, the NMBP. The analysis is carried out within the framework provided by a generative model of grammar. I do not intend this paper to be an exhaustive analysis of the data, but rather to set a basis for the further investigation of both the numeral system and the structure of the NP in Maltese.

I will restrict myself to data involving the set of Maltese numerals denoting the cardinal numbers. The basic idea is that these numerals have certain syntactic properties in common with lexical heads and should therefore also be treated as syntactic heads.

2. Syntactic categories

In most of the literature on syntax, especially within the Principles-and-Parameters model of Chomsky, two kinds of syntactic categories are distinguished: lexical and functional categories. The lexical categories, which categorise "content" words, are N (Noun), V (Verb), A (Adjective) and P (Preposition). They are assumed to be formally complex entities defined in terms of the attributes V and N and can be represented as pairs of feature specifications with Boolean values as shown in (1).

1.

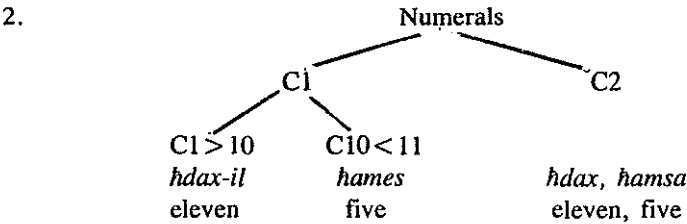|	V	N
N	−	+
V	+	−
A	+	+
P	−	−

Several kinds of functional categories have been proposed in the last few years. Typical functional categories being used in the literature are D (Determiner), AGR (Agreement), T (Tense) and C (Complementiser) but also Q (Quantifier), Ks (Case), NUM (number) and ASP (Aspect). (See Abney 1986, Chomsky 1989, Ouhalla 1997, Pollock 1988, Radford 1989, amongst others). Unlike lexical categories, they are usually taken to be atomic. They correspond to closed classes such as the class of determiners and that of inflectional morphemes.

The structural relations involving different sets of categories within the sentence are expressed in the generative framework by the theory of X-Bar-Syntax (see Chomsky 1970, Jackendoff 1977), which basically gives formal expression to the notion of "syntactic head". A head category is a category that projects onto a maximal phrase.

In what follows I will first discuss the main phonological, morphological and syntactic properties of the numerals that a theory would have to account for and then suggest a representation that accounts for some of the properties discussed.

3. The numerals

On the basis of their phonological, morphological and syntactic properties, the Maltese numerals can be divided into two main classes: the C1s (cardinals of class 1) and C2s (cardinals of class 2). The C1s can be further divided into the two subclasses, those belonging to the C1 > 10 class (the C1s greater than 10) and those belonging to the class C1 < 11 (the C1s smaller than 11).

2.

```
                          Numerals
                    C1                    C2

        C1 > 10        C10 < 11
        ħdax-il        ħames        ħdax, ħamsa
        eleven         five         eleven, five
```

The following table (3) shows a list of numerals divided into the two main classes. The C1s and C2s for the numbers greater than nineteen (except for hundred) are homophonous. This paper will be mainly concerned with differences in the properties of C1 and C2. The differences between C1 > 10 and C1 < 11 will only be hinted at.

3.

English	C1	C2
one	wieħed/waħda	wieħed/waħda
two	żewġ	tnejn
three	tliet	tlieta
four	erba'	erbgħa
five	ħames	ħamsa
six	sitt	sitta
seven	seba'	sebgħa
eight	tmien	tmienja
nine	disa'	disgħa
ten	għaxar	għaxra
eleven	ħdax-il	ħdax
twelve	tnax-il	tnax
...	...	...
nineteen	dsaghtax-il	dsaghtax
twenty	għoxrin	għoxrin

3. (contd)	twenty one	wiehed-u-għoxrin	wiehed-u-għoxrin
	twenty two	tnejn-u-għoxrin	tnejn-u-għoxrin
	...	...	...
	thirty	tletin	tletin
	` thirty one	wiehed-u-tletin	wiehed-u-tletin
	...	...	...
	hundred	mitt	mija
	...	...	...
	hundred and two	mija-u-żewġ	mija-u-tnejn
	...	...	...
	thousand	elf	elf

For the sake of simplicity, in what follows I will rather inaccurately but more concisely use for example the expression "the numerals from two to four" instead of "the numerals for the numbers from two to four".

4. The properties of numerals

4.1 Morpho-phonological effects

One of the main differences between C1s and C2s is the fact that C1s are subject to certain morpho-phonological processes which C2s are not subject to. With the C1s from eleven to nineteen a suffix -il appears. This suffix has nothing to do with the homophonous definite article and its only function synchronically seems to be the overt marking of C1s as opposed to the morphologically unmarked C2s. -il is probably the morphological reflex of a lexical operation that derives a C1 from a basic entry common to both C1s and C2s (see Fabri 1993).

4. (a) hdax-il   ktieb   (b) *hdax   ktieb
      eleven-C1 book (msg)   eleven   book (msg)
      eleven books

The C1s from two to ten appear with the so-called *t-marbuta* (bound t), which triggers i-epenthesis on the noun that follows the numeral.

5. (a) kotb-a   (b) żewġ   kotb-a
      book-pl   two   book-pl
      books   two books

    (c) hbieb   (d) żewġ-t ihbieb
      friends   two   friend (pl)
                           two friends

It is not yet quite clear what conditions the occurrence of *t-marbuta* is subject to but some tentative generalisations can be made. *t-marbuta* appears on a C1 if the noun that follows starts with a consonant cluster. It is obligatory if the noun is monosyllabic (see 6) but optional if it is polysyllabic, with stress on the first syllable (see 7). *t-marbuta* is not possible if the main stress is not on the initial syllable of the noun (see 8). (The italicised vowel in the following examples is the nucleus of the stressed syllable.)

6. (a) żewġ-t iħb*ie*b   (b) *żewġ ħb*ie*b
     two   friend (pl)   two   friend (pl)
     two   friends

7. (a) żewġ-t ibr*a*mel   (b) żewġ br*a*mel
     two   buckets (pl)   two   bucket (pl)
     two   buckets   two   buckets

8. (a)*żewġ-t itrakk-ij*ie*t   (b) żewġ trakk-ij*ie*t
     two   truck-pl   two   truck-pl
     two   trucks   two   trucks

There are cases though in which the noun begins with a stressed syllable having a cluster as onset, which however does not trigger *t-marbuta*. Some examples are shown in (9):

9. (a)*żewġ-t ipl*a*tt-i   (b) żewġ pl*a*tti-i
     two   plates-pl   two   plate-pl

    (c)*żewġ-t ist*a*mp-i   (d) żewġ st*a*mp-i
     two   pictures-pl   two   picture-pl
                           two   pictures

    (e)*żewġ-t iġranet   (f) żewġ ġranet
     two   day (pl)   two day (pl)
                           two days

A more detailed analysis of the data needs to be carried out to account for these apparent "exceptions". What can be claimed with certainty is the fact that the "exceptionality" has nothing to do with the romance or semitic origin of the nouns involved. One could claim for example that only nouns of semitic origin trigger *t-marbuta*, given the general conditions just described. This cannot be correct however since there are words of romance origin, such as *skejjel* 'schools' from Italian *scuola* for example, that obviously trigger *t-marbuta*.

10. (a) żewġ-t iskejjel   (b) żewġ skejjel
     two   school (pl)   two   school (pl)
     two   schools   two   schools

Finally the noun *jiem* 'days' is the only word I am aware of that does not start with a consonant cluster but still forces a Cl idiosyncratically to carry the *t-marbuta*.

11. (a) żewġ-t ijiem   (b) *żewġ jiem
     two   day(pl)   two   day (pl)
     two   days

4.2 Transtivity

Cls cannot appear on their own and they must be followed by the noun they qualify, in other words they are transitive. C2s however may appear on their own, as shown in (13b).

12. (a) Xtraj-t   żewġ   pastizz-i   (b)*Xtraj-t   żewġ
        bought-1sg two (C1)   cheesecake-pl   bought-1sg two (C1)
        I bought two cheesecakes.

13. (a) Xtraj-t   tnejn   pastizz-i   biss   (b) Xtraj-t   tnejn
        bought-1sg two(C2) ch.cake-pl   only   bought-1sg two (C2)
        I only bought two cheesecakes   I bought two

4.3 Adjacency

The following examples show that there are also differences between C1s and C2s concerning the word order patterns involving the numeral and the noun. While a noun has to be right adjacent to a C1 (see 14), there are no such constraints for the nouns of C2s and, with one exception (see 15e), they may appear in different positions within the sentence (see 15).

14. (a) Żewġ   nisa   ġe-w   biss
        two(C1) woman(pl) came-3pl   only
        Only two women came.

    (b)*Żewġ ġew nisa biss.
    (c)*Nisa żewġ ġew biss.
    (d)*Nisa ġew żewġ biss.
    (e)*Ġew nisa żewġ biss.
    (f) Ġew żewġ nisa biss.

15. (a) Tnejn   nisa   ġe-w   biss.
        two(C2) woman(pl) came-3pl   only
        Two women only came.

    (b) Tnejn ġew nisa biss
    (c) Nisa tnejn ġew biss
    (d) Nisa ġew tnejn biss
   (e)*Ġew nisa tnejn biss
    (f) Ġew tnejn nisa biss.

Constructions with C2s like those in (15) and (13a) are topic-constructions. The noun *nisa* in (15) is a topic noun, that is technically a noun phrase that is freely Chomsky-adjoined to a maximal phrase.

The ungrammaticality of (15e) shows that the topic-noun is adjoined to TP (i.e. Tense-Phrase; the maximal projection encoding the sentence level), as shown in (16a) and not to the noun phrase containing the numeral itself as in (16b). (The double lines in (16) indicate the path of the head.)

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16. (a)
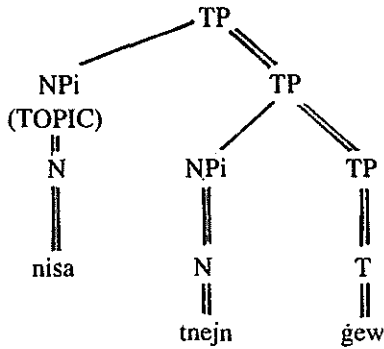
(b)
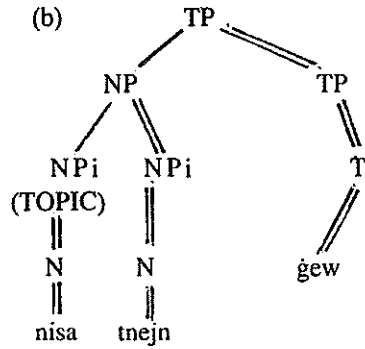
If the topic-noun were freely adjoined to the noun phrase containing the numeral, i.e. either to the left or to the right of the NP, one could not explain the ungrammaticality of (15e).

4.4 Government

4.4.1. Definiteness

Independently of whether a C1 is itself definite or not, it always governs an indefinite noun.

17. (a) żewġ   kotb-a
      two(C1) book-pl
      two books

(b)*żewġ   il-kotb-a
     two   df-book-pl

(c) iż-żewġ   kotb-a
      df-two(C1) book-pl
      two books

(d)*iż-żewġ il-kotb-a
     df-two   df-book-pl

Unlike C1s, C2s can appear either with a definite or an indefinite noun. In fact a typical characteristic of topic-constructions like those in (15) is that the numeral and the topic-noun have to agree in terms of definiteness.

18. (a) Tnejn   nisa   ġew
      two(C2) woman(pl) came
      Two women came

(b) It-tnejn   in-nisa   ġew
     df-two(C2)df-woman(pl)came
     Both women came

(c)*Tnejn in-nisa   ġew
     two(C2) df-woman(pl) came

(d)*It-tnejn nisa   ġew
     two(C2) woman(pl) came

Whether this constraint in definiteness results from a semantic or a syntactic condition is an interesting question that however will not be explored in this paper, since an answer would require a detailed account of the underlying theory of agreement. What is important for the purpose of this paper is that the data show that the grammatical relation between a C1 and the noun, on the one hand, and a C2 and a noun, on the other hand, is completely different in nature: the former is a government relation (rection), the latter an agreement relation (concord).

4.4.1. Countability

C1s obligatorily govern a countable noun (see 19), while C2s may appear with either a countable or an uncountable noun (see 20).

19. (a) żewġ   pastizz-i
       two(C1) cheesecakes
       two cheesecakes

    (b)*żewġ   kafe
         two(C1) coffee (unc)

20. (a) tnejn   pastizzi
       two(C2) cheesecake
       two cheesecakes

    (b) tnejn   kafe
       two(C2) coffee (unc)
       two coffees

These facts can be interpreted as follows: C2s are proforms for C1s and the noun they govern. In (20b) for example the C2 *tnejn* stands for a measure phrase such as *żewġ kikkri* 'two cups'.

The fact that C2s are proforms also explains why they can appear on their own (see (13b) repeated here as (21a) for convenience) or only with modifying adjectives, without the head noun. Unlike C2s, C1s cannot appear only with an AP (see 21c).

21. (a) Xtraj-t   tnejn
       bought-1sg two(C2)
       I bought two

    (b) Xtraj-t   tnejn   ġodd-a
       bought-1sg two(C2) new-pl
       I bought two new ones.

    (c)*Xtraj-t   żewġ   ġodd-a
       bought-1sg two(C1) new-pl

tnejn in (21a) and (21b) stands for *żewġ* and some noun that is not expressed overtly but whose reference can be identified within the discourse context.

4.5 Stress

C1s are usually unstressed and C2s are usually stressed. Constructions with stressed C1s are marked. In fact using a topic-construction with a C2 is the usual strategy adopted if a numeral needs to be stressed.

22. (a)?Żewġ   kotb-a   xtraj-t   biss.
       two(C1) book-pl bought-1sg only

    (b) Tnejn   kotb-a   xtraj-t   biss
       two(C1) book-pl bought-1sg only
       I only bought two books

C2s are unstressed if they appear with uncountable nouns, i.e. as proforms for C1 + measure-noun or adjective, otherwise they are always stressed.

4.6 Partitive constructions and counting

Finally C2s but not C1s occur in partitive constructions and are used for counting.

23. (a) tnejn minn dawk il-kotb-a
       two from those df-book-pl
       two of those books

    (b)*żewġ minn dawk il-kotb-a
       two from those df-book-pl

24. (a) wieħed, tnejn, tlieta..tlaq-na!
       one, two, three..go-1pl
       one, two, three...off we go!

    (b)*wieħed, żewġ, tliet..tlaq-na!
       one, two, three...go-1pl

These last two facts show an interesting parallelism between the indefinite article *a/an* in English, which has properties similar to the C1s in Maltese, and the numeral *one* corresponding to the C2s. These similarities are emphasized by the phonological facts involving stress and the *t-marbuta* (partly comparable to the variation *a/an* in English.) In fact even in English it seems to be reasonable to consider the indefinite article to be an unstressed form of the numeral *one*. i.e. a NMB-category, rather than a determiner in the sense of the indefinite article, i.e. a D-category. Maltese differs from English in that the difference between the two sorts of numerals extends throughout the whole numeral system and is not just limited to the numeral for one.

To conclude this section, the properties of C1s and C2s are listed in Table I:

Table I

C1	C2
1. trigger morpho-phonological processes	1. –
2. are transitive	2. may appear with or without a noun
3. are adjacent to the noun	3. are not obligatorily adjacent to the noun
4. govern an indefinite noun	4. may appear with a definite or indefinite noun
5. govern a countable noun	5. may appear with a countable or uncountable noun
6. are usually stressed	6. may be stressed or unstressed
7. –	7. appear in partitive constructions
8. –	8. are used for counting

5. Parallelisms with lexical heads

There are some interesting syntactic and morphological parallelisms between constructions involving numerals and constructions with lexical heads. A comparison of C1s with transitive lexical heads (i.e. $X°$-categories) and C2s with intransitive heads carrying an agreement marker (i.e. $X° + Mk$) reveals a parallelism in terms of adjacency, proforms and the licensing of associated topic-nouns, as well as other related properties.

5.1. Adjacency

Just like the noun in a construction with a C1, subcategorised arguments of transitive lexical heads appear right adjacent to the head in unmarked constructions.

25. (a) C1
    żewġ nisa
    two   women
    two women

    (b) Poss-N
    ras   it-tifel
    head df-boy
    Posm Posr
    the boy's head

(c) V

    raj-t   l-ir-raġel

    saw-1sg Cs-df-man

    Sb   dO

    I saw the man

(d) P

    fuq iż-żiemel

    on df-horse

         pO

    on the horse

It is typical for heads to govern their arguments, that is to determine their morphological form. For example a transitive verb typically obligatorily governs a case marked (i.e. *lil*-marked) direct object, if the referent of the noun phrase is "human", and a non-case marked noun otherwise[1]. Moreover in unmarked constructions lexical heads, just like C1s, are unstressed.

5.2. Proforms

It has been shown that it is reasonable to assume that C2s are proforms for C1 + Noun. If the argument of a transitive lexical head is missing, an agreement marker must appear on the head, such that X + Mk acts as a proform for X and its complement.

26. (a) C2

    Tnejn ġe-w

    two   came-3pl

         Sb

    Two came

(b) Poss-N + Mk

    Ras-u   kbira.

    head-3msg big

    Posm-Posr

    His head is big.

(c) V + Mk

    Raj-t-u

    saw-2sg-3msg

      Sb dO

    I saw him

(d) P + Mk

    Fuq-u   qbiż-t

    on-3msg jump-2sg

      pO   Sb

    You jumped on him.

The proforms in all of these constructions typically obtain main stress.

5.3. The topic-phrase

A C2, just like an X + Mk element, can optionally occur with a topic-noun that is associated with it.

27. (a) C2

    Nisa   tnejn ġe-w

    women two came-3p

    Tp   Sb

    Two women came

    ("As for women, two came.")

(b) Poss-N + Mk

    Pawlu ras-u   kbira

    Paul head-3msg big

    Tp   Posm-Posr

    Paul's head is big.

    ("As for Paul's head, it is big")

(c) V+Mk

Lil Marija   raj-t-ha
Cs Mary   saw-1sg-3fsg
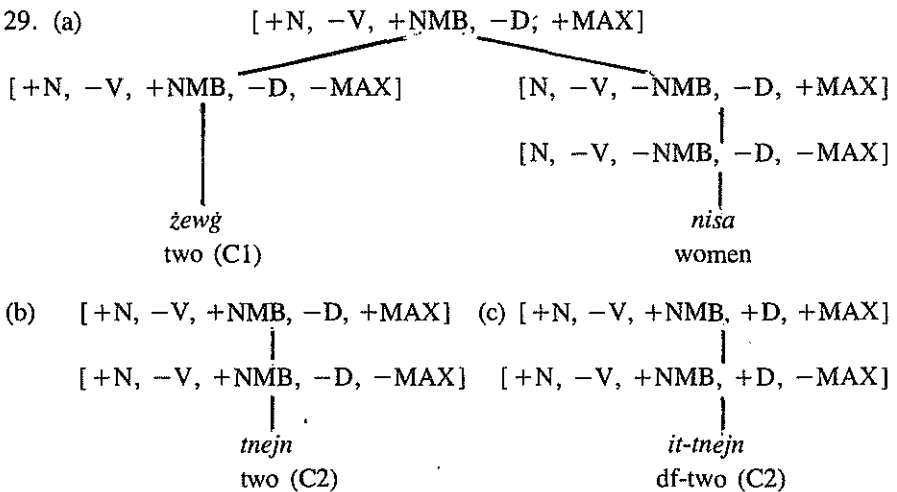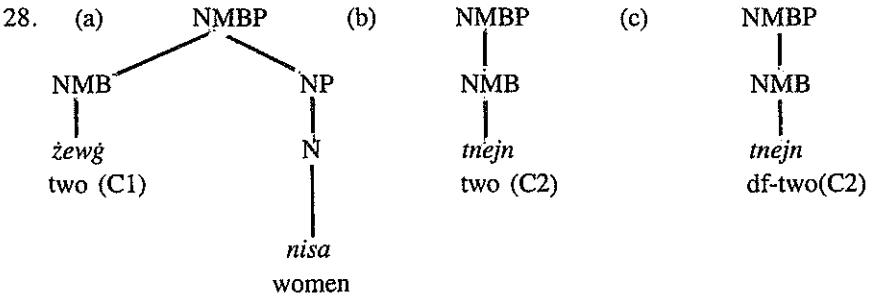
Tp   Sb dO
I saw Mary
("Mary, I saw her.")

(d) P+Mk

Jane iż-żiemel eżatt fuq-u qabż-et
Jane df-horse exact on-3msg
                        jump-3fsg

Sb Tp
Jane jumped exactly on the horse
("Jane, she jumped exactly on
  the horse.")

On the basis of these parallelisms, it seems reasonable to assume that numerals in Maltese also have the status of heads. They belong to a category [+NMB] which projects onto a maximal phrase NMBP. C1s are transitive NMB-heads and C2s are proforms for NMBP. The structures involved are those shown in (28). In (29) I adopt a rather more complex representation of functional categories as pairs consisting of a feature attribute with a Boolean value. The feature MAX encodes the bar level and D definiteness.

28. (a)

```
        NMBP
       /    \
   NMB       NP
    |         |
  żewġ        N
  two (C1)    |
            nisa
            women
```

(b)

```
   NMBP
    |
   NMB
    |
  tnejn
  two (C2)
```

(c)

```
   NMBP
    |
   NMB
    |
  tnejn
  df-two(C2)
```

29. (a)

```
                [+N, −V, +NMB, −D, +MAX]
               /                        \
[+N, −V, +NMB, −D, −MAX]        [N, −V, −NMB, −D, +MAX]
          |                              |
          |                     [N, −V, −NMB, −D, −MAX]
          |                              |
        żewġ                           nisa
        two (C1)                       women
```

(b)   [+N, −V, +NMB, −D, +MAX]
           |
      [+N, −V, +NMB, −D, −MAX]
           |
         tnejn
         two (C2)

(c) [+N, −V, +NMB, +D, +MAX]
          |
     [+N, −V, +NMB, +D, −MAX]
          |
        it-tnejn
        df-two (C2)

6. Concluding remarks

Much remains to be said not only about the status of numerals but also about the general structure of the noun phrase in Maltese. For example it is important to explore the question of where exactly modifying APs (adjective phrases) appear structurally within the NP or DP. This is especially relevant in connection with Cls < 11 which govern a noun in the plural, and Cls > 10, which govern a singular noun. In the former case agreement is with a plural adjective, in the latter however either with a singular or with a plural adjective (see 30). A VP (verb phrase) agreeing with a noun phrase containing a numeral however is always plural, no matter whether the numeral is a Cl > 10 (see 31) or a Cl < 11 (see 32).

30. (a) iż-żewġ   kotb-a   ġodd-a   (b)*iż-żewġ   kotb-a   ġdid
        df-two(Cl)book-pl new-pl   df-two   book-pl   new(msg)
        the two new books

    (c) l-ghoxrin   ktieb   ġdid   (d) l-ghoxrin   ktieb   ġodd-a
        df-twenty(Cl) book(msg) new(msg)   df-twenty(Cl) book(msg) new-pl
        the twenty new books   the twenty new books.

31. (a) Ghoxrin   mar-a   marr-u   gha-d-dimostrazzjoni.
        twenty(Cl)   woman-sg   went-pl   for-df-demonstration
        Twenty women went to the demonstration.

    (b) *Ghoxrin   mar-a   marr-et   gha-d-dimostrazzjoni
         twenty(Cl)   woman-fsg   went-3sg   for-df-demonstration.

32. (a) Żewġ   nisa   marr-u   gha-d-dimostrazzjoni
        two (Cl) woman(pl)   went-pl   for-df-demonstration
        Two women went to the demonstration

    (b) *Żewġ   nisa   marr-et   gha-d-dimostrazzjoni
         two(Cl)   woman(pl)   went-fsg   for-df-demonstration

Other questions concern the status of measure phrases, as well as the definite article, demonstratives and the case particle *lil*. Unfortunately up to now very little serious work on Maltese has been done within the framework of generative linguistics (see however Bonello 1968 and Fabri 1993) and much groundwork still has to be carried out until a more or less plausible and adequate syntactic theory of the noun phrase in Maltese is developed. Hopefully this paper serves as an inspiration for further attempts, especially by Maltese linguists, to develop just such a theory.

Abbreviations

df	definite	1	1st person	Sb	subject
f	feminine	2	2nd person	dO	direct object
m	masculine	3	3rd person	pO	prepositional object
pl	plural				
sg	singular				

Note

"Human" is to be understood in a very wide sense since pets as well as inanimate objects that have typical human names are also case marked.

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